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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,266	11/17/2003	Frank E. Gennari	UCALP011X1/B02-005-3	6483
22434	7590	03/24/2006	EXAMINER	
BEYER WEAVER & THOMAS LLP P.O. BOX 70250 OAKLAND, CA 94612-0250			WHITMORE, STACY	
			ART UNIT	PAPER NUMBER
			2825	
DATE MAILED: 03/24/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/716,266	Applicant(s) GENNARI, FRANK E.	
	Examiner Stacy A. Whitmore	Art Unit 2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 11-14, 23-26, 30 and 32-34 is/are rejected.
- 7) ☒ Claim(s) 7-10, 15-22, 31 and 35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/29/2004</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-6, 25-26, 30, and 32-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Pierrat (US Patent 7,003,757).

2. As for the claims, Pierrat discloses the invention substantially as claimed, including:

1. A method for locating areas in a mask layout of an integrated circuit which are impacted by aberrations in projection printing comprising the steps of:

a) generating a description of a mask layout [fig. 2, elements 231, 235];

b) generating a description of an aberration function [col. 2, lines 50-56, fig. 7, element 710];

c) sequentially comparing the aberration function to the mask layout geometry as the mask layout is scanned using an algorithm based on edges of the mask layout [col. 4, lines 46-67, fig. 11]; and

d) identifying any area in the mask layout tending to match the aberration function [col. 4, lines 46-67, fig. 11];

2. The method as designed by claim 1 wherein in step c) only pixels along edges of the mask layout are stored and compared with the aberration function [col. 4, lines 46-67, fig. 11 – evaluation points];

3. The method as defined by claim 2 wherein the layout is partitioned and each partition is sequentially compared [fig. 3 - dissection of the polygons of the layout; col. 16];

4. The method as defined by claim 2 wherein pixel values for a line are cumulatively weighed along the line whereby a weight for a line segment is obtained from a beginning pixel value and an end pixel value for the line segment [col. 16, lines 45-67; col. 13, lines 42-62];

5. The method as defined by claim 4 wherein the weight for a line segment is obtained by subtracting an end pixel value from the beginning pixel value [col. 13, lines 15-32, where segment distances are obtained];

6. The method as defined by claim 3 wherein step c) rank orders all mask layout edges, corners, and other geometries according to degree of similarity to the aberration function [col. 16, line 60 – col. 17, line 15];

7. The method as defined by claim 6 wherein the description of the aberration function is modeled as producing spillover between mask openings with a localized pattern that is the inverse Fourier transform of the optical path difference function in the pupil of the projection printing system [XXXXXXXXXXXXX];

8. The method as designed by claim 7 wherein step d) rank orders locations based on match factors of the layout geometry and the aberration function [XXXXXXXXXXXXX];

9. The method as defined by claim 7, and further including step e) modifying the mask layout in response to identified matches with an aberration function [XXXXXXXXXXXXX];

10. The method as defined by claim 9 wherein step b) includes generating descriptions of a plurality of aberration functions and step c) compares the plurality of aberration functions to the mask layout [XXXXXXXXXXXXX];

11. The method as defined in claim 1 wherein step b) includes generating descriptions of a plurality of aberration functions and step c) compares the plurality of aberration

functions to the mask layout [col. 2, lines 50-56, fig. 7, element 710, col. 4, lines 46-67, fig. 11];

25. A method for comparing one image to another image comprising the steps of: a) generating a description of a first image [fig. 2, elements 231, 235]; b) generating a description of a second image [fig. 2, elements 231, 235]; and c) sequentially comparing the second image description to the first image description to identify areas of similarity or dissimilarity, the comparing being based on corresponding geometrical patterns in the first and second images [col. 2, lines 50-56, fig. 7, element 710; col. 4, lines 46-67, fig. 11];

26. The method as designed by claim 25 wherein the geometric patterns are lines in the images [col. 14];

30. The method as defined by claim 25 wherein at least one image is a photo mask pattern [col. 2];

32. The method as defined by claim 25 wherein the images are photographs [col. 2, line 17];

33. In a process for comparing geometric shapes in a mask layout for a description of an aberration function, a method for designing the geometric shapes comprising the steps of: a) cumulatively weighting pixels in each geometric shape []; and b) storing only the cumulative weights for selected pixels [fig. 2, elements 231, 235; col. 2, lines 50-56, fig. 7, element 710; col. 4, lines 46-67, fig. 11; col. 4, lines 46-67, fig. 11; col. 16, lines 45-67; col. 13, lines 42-62];

34. The method as defined by claim 33 wherein the pixel values for a line are cumulatively weighted along the line whereby a weight for a line segment is obtained from a beginning pixel value and an end pixel value for the line segment [fig. 2, elements 231, 235; col. 2, lines 50-56, fig. 7, element 710; col. 4, lines 46-67, fig. 11; col. 4, lines 46-67, fig. 11; col. 16, lines 45-67; col. 13, lines 42-62];

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 12-14, 23-24, and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pierrat (US Patent 7,003,757) in view of Lepselter (US Patent 5,455,427).

4. As for the claims, Pierrat discloses the invention substantially as claimed, including:

12. A method for locating areas in a mask layout for an integrated circuit which are impacted by aberrations in projection printing comprising the steps of: a) generating a description of a mask layout, b) generating a description of an aberration function, c) sequentially comparing the aberration function to the mask layout as the mask layout is scanned using an algorithm in the mask layout, and d) identifying any area in the mask layout tending to match the aberration function [fig. 2, elements 231, 235; col. 2, lines 50-56, fig. 7, element 710; col. 4, lines 46-67, fig. 11; col. 4, lines 46-67, fig. 11; col. 16, lines 45-67; col. 13, lines 42-62].

13. The method as defined by claim 12 wherein the layout is partitioned and partitions are sequentially compared [fig. 2, elements 231, 235; col. 2, lines 50-56, fig. 7, element 710; col. 4, lines 46-67, fig. 11; col. 4, lines 46-67, fig. 11; col. 16, lines 45-67; col. 13, lines 42-62];

23. The method as defined in claim 12 wherein step b) includes generating descriptions of a plurality of aberration functions and step c) compares the plurality of aberration

functions to the mask layout [col. 2, lines 50-56, fig. 7, element 710, col. 4, lines 46-67, fig. 11];

Pierrat does not specifically disclose that the algorithm is based on rectangles or triangles in the mask layout

Lepselter discloses the use of exposure shapes such as rectangles, triangles, and other polygon shapes [col. 1].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Pierrat and Lepselter because using shapes such as a rectangle or triangle for comparing aberrations within Pierrat's system would have utilized a convenient shape for creating small shapes on a mask for ease of checking for defects [see Lepselter, col. 2-3].

5. Claims 7-10, 15-22, 31, and 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stacy A. Whitmore whose telephone number is (571) 272-1685. The examiner can normally be reached on Monday-Thursday, alternate Friday 6:30am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Chiang can be reached on (571) 272-7483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stacy A Whitmore
Primary Examiner
Art Unit 2825

SAW
March 20, 2006

A handwritten signature in black ink, appearing to read 'SAW', followed by a stylized flourish or second signature.